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NRO review(s) completed.

by AF BMD  
(Gen. Rutland)

DISCOVERER Problems - [redacted] Analysis

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At the end of June 1959 [redacted] was asked to perform on a crash basis a special independent analysis of the basic specs and performance of the DISCOVERER vehicle with particular reference to performance and design margins; analysis of the specific telemetry and tracking data obtain in the last 4 flts; analysis of flight planning for next few flights; and provide AFBMD conclusions or recommendations which appeared pertinent to the program.

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[redacted] did a 2 weeks examination under the supervision of [redacted] and reported on 10 July 1959

Vehicle performance improvements and changes in specs for trajectory and orbital parameters shld be considered mandatory prior to another flight.

AFBMD should select either 120/0.05 or 140/0.1 trajectory once the Lockheed analysis of the recovery problem at the 0.05 orbital eccentricity and depending on results of specific investigation of range safety and schedule problem at Vandenberg for a 140 mile injection altitude.

(The question--whether the desired 0.01 orbital eccentricity with 140 mile injection can be attained, or whether a greater eccentricity of 0.05 with 120 mile injection could be allowed without lessening probability of recovery.)

i.e. If one wishes to approximately maintain the specified recovery characteristics and hold the orbital eccentricity to 0.01 originally specified, one shld loft the trajectory and inject at a higher nominal altitude (approx. 140 miles) in order to obtain greater than 0.9 probability of orbiting with minimum increased vehicle performance, not including reliability factors.

Recom: A tracking station shld be established near the point of injection prior to next flt. for more adequate telemetry and tracking data.

Recom: Tests shld be run on the RJ-1 before its use in Thor booster.

Recom: providing additional vehicle velocity through means of reducing weight and improving thrust

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[redacted] conclusion that the program inevitably is a "high risk" program with a very complex total system, therefore the design margins shld be established to achieve very high probability of orbiting properly in the absence of malfunctions or reliability failures. Target launching dates should not be delayed until the completion of all necessary prerequisites for high-confidence launch.

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